Cost-effectiveness of primary care-based risk assessment and hereditary cancer genetic testing

EE 356

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BACKGROUD

Clinical guidelines recommend:

- Identifying individuals with a personal or family history of cancer
- Offering genetic testing to support risk management

Despite this, in primary care:

- Risk assessment and genetic testing remain underused
- The optimal strategy for patient engagement is still unknown

OBJECTIVES

- Estimate the incremental cost-effectiveness ratio (ICER) between two population-based engagement strategies
- Evaluate:
  - Number of individuals screened and tested
  - Cost of providing services in a primary care setting
  - Cost-effectiveness of each strategy

METHODS

- Developed a decision-analytic cohort model to compare two strategies from the EDGE trial:
  - In-clinic point-of-care (POC) screening
  - Direct patient engagement (DPE) via mailed invitations
- At-risk individuals were offered complimentary genetic testing
- Modeled a 2-year horizon, testing all clinic patients
- Perspectives:
  - Health-system (HS)
  - Limited societal (LS)
- Outcomes:
  - Number of patients screened and tested
  - Strategy costs
  - Incremental cost-effectiveness ratios

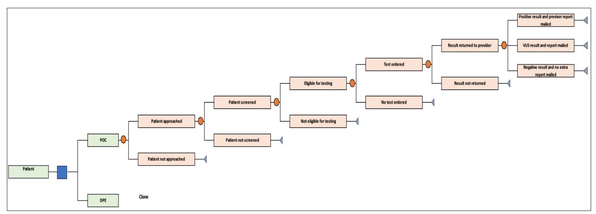

Figure 1: Decision Tree

RESULT

	Health-system perspective		Limited societal perspective	
Strategy	**POC**	**DPE**	**POC**	**DPE**
Cost	**$641,278**	**$702,653**	**$648,802**	**$703,875**
Incremental cost		**$61,375**		**$55,073**
Patients screened	**14,490**	**6,385**		
Incremental pts screened		**-8,105**		
ICER for screening		**DPE dominated by POC**		**DPE dominated by POC**
Patients tested	**780**	**1184**		
Incremental pts tested		**404**		
ICER for testing		**$152**		**$136**

- POC led to more risk assessments completed (dominant in 68% of simulations)
- DPE led to more genetic testing completions (favored in 52–58% of simulations)
- Despite uncertainty, DPE may be cost-effective at a $250/test kit threshold
- Key drivers of outcomes included:
  - Number of patients approached in the POC arm
  - Tests ordered in the POC arm
  - Year 1 maintenance costs in the POC arm

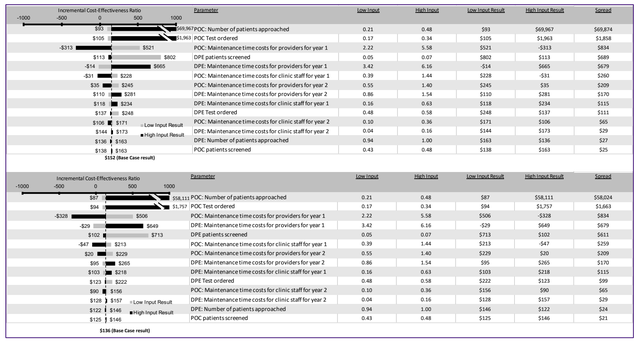

Figure 2: One-way sensitivity analyses

2a: health-system perspective tested; 2b: limited societal perspective tested

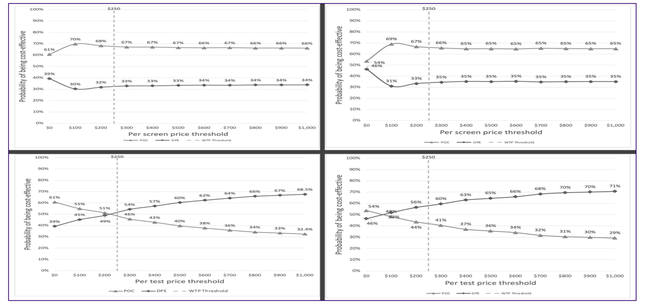

Figure 3: Cost-effectiveness acceptability curves

3a: HS perspective screened; 3b: LS perspective screened; 3c: HS perspective tested; 3d: LS perspective tested

CONCLUSIONS AND RELEVANCE:

- POC improved risk assessment completion, while DPE increased testing uptake
- Results highlight the importance of engagement strategy in program effectiveness
- A hybrid approach—DPE followed by POC for non-responders—may offer optimal outcomes